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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,060	09/30/2003	Xiangfeng Duan	01-001420	1190
33140	7590	01/26/2005	EXAMINER	
ANYA, IGWE U				
ART UNIT		PAPER NUMBER		
2829				

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/674,060	DUAN ET AL.	
	Examiner	Art Unit	
	Igwe U. Anya	2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 October 2004.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 173,175-222,224,225 and 227-245 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 234-243 is/are rejected.
- 7) Claim(s) 173,175-222,224,225,227-233,244 and 245 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 September 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the one or more pairs of source and drain contacts including providing electrical conductivity to a plurality of semiconductor devices must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
2. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 173, 175 – 222, 224, 225, and 227 – 233 are objected to because of the following informalities: claimed features are not shown in the drawing as objected to above. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 234 – 236, 239 and 240 are rejected under 35 U.S.C. 102(e) as being anticipated by Chau et al. (USPAP 2004/0036126).

6. Chau et al. teach: a substrate (302);
a plurality nanowires (308, paragraph 19) disposed on the substrate (fig. 4B);
a first source contact (460) and drain contact (480) formed in or on the substrate providing electrical connectivity to the plurality of nanowires, wherein the plurality of nanowires form a channel (350, paragraph 24) between the source and the drain;
the nanowires are at least 5 (fig. 4B, paragraph 25);
the nanowires are aligned parallel to their long axis (fig.4B); and
a gate contact (324) formed above or below the nanowires.

Art Unit: 2825

7. Claims 234 – 240, 242, and 243 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi et al. (US Patent 6566704).
8. Choi et al. teach: a substrate (10);
a plurality nanowires (100) disposed on the substrate (fig. 4A, col. 3 lines 39 -67);
a first source contact (40) and drain contact (50) formed in or on the substrate providing electrical connectivity to the plurality of nanowires, wherein the plurality of nanowires form a channel (col. 3 lines 55 – 60) between the source and the drain;
the nanowires are at least 10 (figs. 4A, 4B);
the nanowires are at least 100 (fig. 5A);
the nanowires are aligned parallel to their long axis (col. 3 lines 41 – 43);
a gate contact (20) formed above or below the nanowires (fig. 4A); and
the nanowires provide operational current level of 2 to 10 nanoamps (figs. 7 & 8).
9. Claims 234, 235, 242 and 243 are rejected under 35 U.S.C. 102(e) as being anticipated by Avouris et al. (USPAB 2004/0061422).
10. Avouris et al. teach: a substrate (102);
plurality nanowires (103, paragraphs 14, 18) disposed on the substrate (fig. 1A);
a first source contact (104) and drain contact (105) formed in or on the substrate providing electrical connectivity to the plurality of nanowires, wherein the plurality of nanowires form a channel (350, paragraph 24) between the source and the drain; and
the nanowires provide operational current level of 2 to 10 nanoamps (claim 8).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claim 241 is rejected under 35 U.S.C. 103(a) as being unpatentable over Choi et al. (US Patent 6566704) in view of Giebelter et al. (USPAB 2003/0042562).

14. Choi et al. teach the features previously outlined, but lack the substrate comprises a flexible thin film.

15. However, Giebelter et al. teach forming nanowires on a flexible substrate for avoiding obstacles with thin films (paragraphs 14, 19).

16. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Giebelter et al. into the Choi et al. reference to avoid obstacles with thin films.

17. Claims 244 and 245 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 173, 175 – 222, 224, 225, and 227 – 233 are allowable with appropriate drawing.

18. Art made of record and not relied upon, considered pertinent to applicant's disclosure Luyken et al. (US Patent 6798000).

Remarks

19. The examiner has reviewed prior art in light of applicant comments and amendment and finds some it persuasive. Avouris et al. teach each molecule to be a carbon nanotube (claim 6), and the channel to comprise of at least two molecules (claim 13). Furthermore, a nanotube is a nanowire (see Lee et al. US Patent 6447663, col. 5 lines 19 –24). Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya
Examiner
Art Unit 2825

IA

January 14, 2005



MATTHEW SMITH
SUPERVISORY PATENT EXAMINER
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